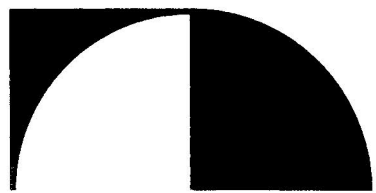

Nakamichi 250

Cassette Player Operating Instructions

WARNING

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

A record of the serial number will help you in the event of insurance claims, shipping or warranty service. Record the serial number (embossed on a plate on the rear panel of the unit) in the space provided below.

Model Number: Nakamichi 250
Serial Number: _____

Contents

Control Functions 1, 2
Connections 3, 4
Mounting Instructions 5
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We wish to take this opportunity to thank you for your purchase.

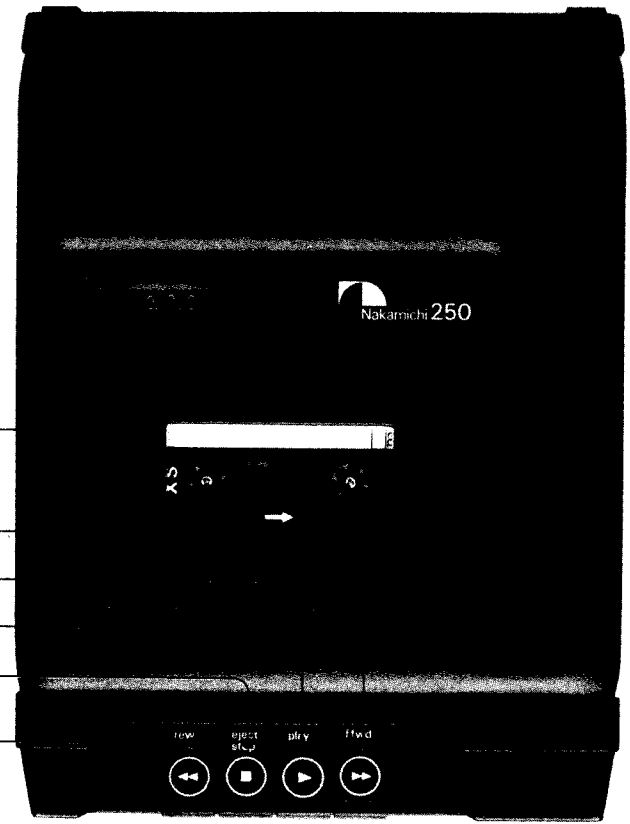
Your Nakamichi 250 should provide you with many years of trouble-free use assuming it is operated and maintained as outlined in this manual.

Please take the time to read this manual in its entirety
before attempting to install or operate your 250.
If you are using your 250 with the ADS 2002 system,
which we most strongly recommend,
please also read the instructions accompanying
the ADS product before proceeding with interconnections.

Thank you.

Nakamichi Corporation

Control Functions



TAPE COUNTER

Facilitates the location of pre-recorded selections on the cassette.

CASSETTE LID

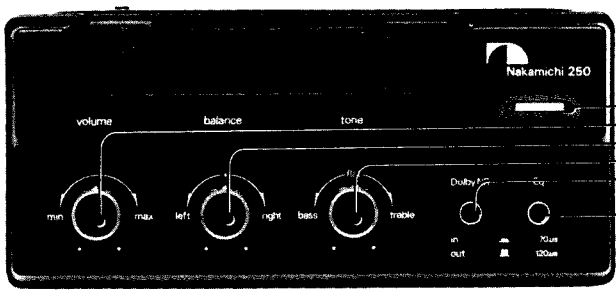
FAST FORWARD BUTTON

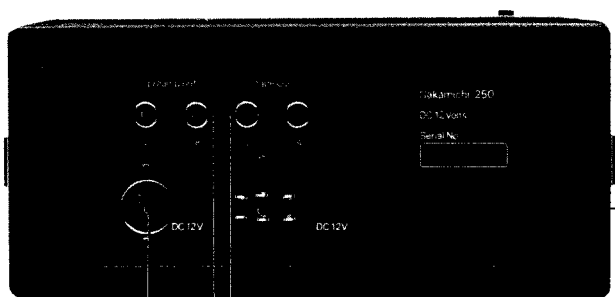
PLAY BUTTON

STOP/EJECT BUTTON

It is necessary to depress the Stop button when changing from one transport mode to another. An extra firm push of this button will eject the cassette.

REWIND BUTTON





POWER INDICATOR LAMP

VOLUME CONTROL

BALANCE CONTROL

TONE CONTROL

Allows the tailoring of frequency response (±9 dB at 10 KHz) to suit individual tastes and to compensate for peculiarities in the recording or listening environment.

DOLBY N.R. SWITCH

Switches the Dolby Noise Reduction circuitry in and out.

EQ SWITCH

Provides the choice of either the 70 or 120 microsecond playback equalization time constant.

6 PIN DC 12 VOLT CAR CONNECTOR

This single connector interfaces the 250 to the ADS 2002 system. All audio and power connections are made through this connector. The ADS 2002 system is supplied 12 volts DC only when the 250's play button is depressed.

TAPE OUTPUTS

These outputs would be connected to the "Tape In," "Tape Play," or "Aux In" jacks of the preamplifier, amplifier or receiver in a home music system. The Volume, Balance and Tone Controls have no effect at these outputs.

DC 12 VOLT JACK

Accepts the optional AC power pack which allows the home use of the 250.

PREAMP OUTPUTS

The Volume, Balance and Tone Controls are functional through these output jacks only. These, therefore, are the audio outputs to the ADS 2002 system and to a power amplifier in a home system.

Connections 1

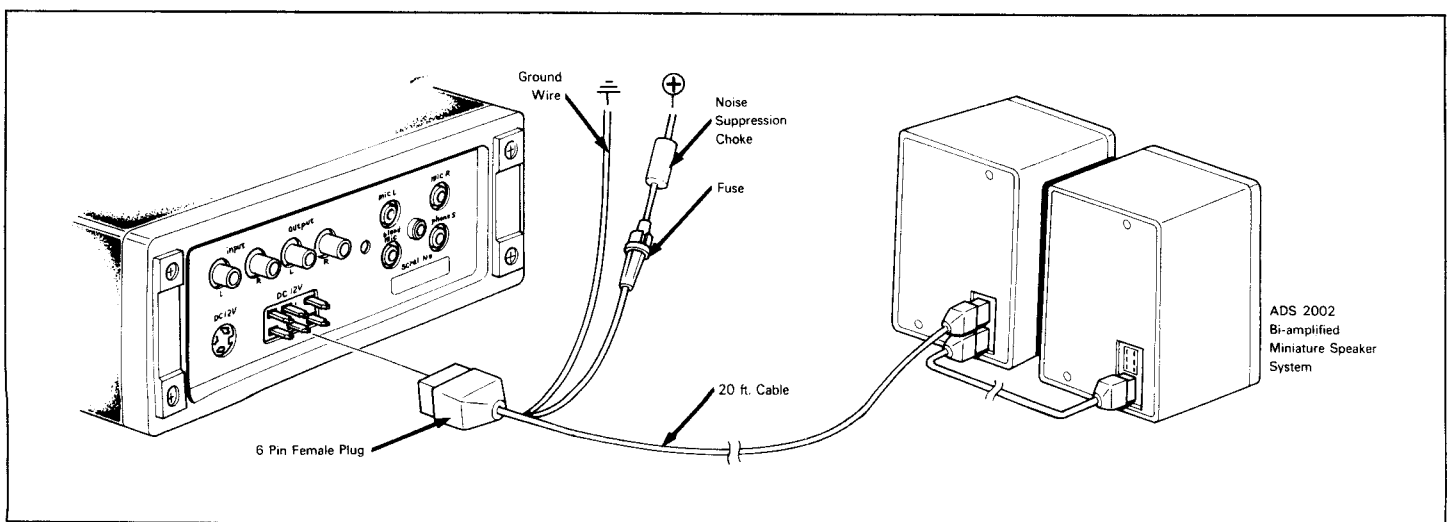
Using the 250 with the ADS 2002 System

The Nakamichi 250 can be easily connected to the ADS 2002 bi-amplified miniature speaker system to provide an extremely high quality cassette playback system in automobiles, planes, boats or any other mobile environment with a 12 volt DC source. The system can also be used indoors with household AC power by utilizing a special optional AC adaptor available from ADS (not the AD-550/551 AC Power Packs manufactured by Nakamichi). Connect the 250 to the ADS system as described below

1. Locate the 20 ft. connecting cable supplied with the ADS system. One end is fitted with a female 6 pin plug and two "Pigtail" wires.
2. The two pigtail wires should be connected to the 12 volt DC source at suitable points in the vehicle's wiring system. The wire with the built-in fuse holder and noise suppression choke should be connected to the +12 volt source, and the remaining wire should be secured to a suitable ground. Consult the literature accompanying the ADS system for further recommendations on connecting the system to the battery supply. If you are unfamiliar with your vehicle's wiring system, it is best to consult a qualified mobile stereo systems dealer.
3. Connect the female 6 pin connector at the end of the 20 ft. ADS cable to the male 6 pin 12 volt car connector on the rear panel of the Nakamichi 250 as shown in the illustration below.
4. Consult the ADS operating instructions for speaker interconnections.

Note:

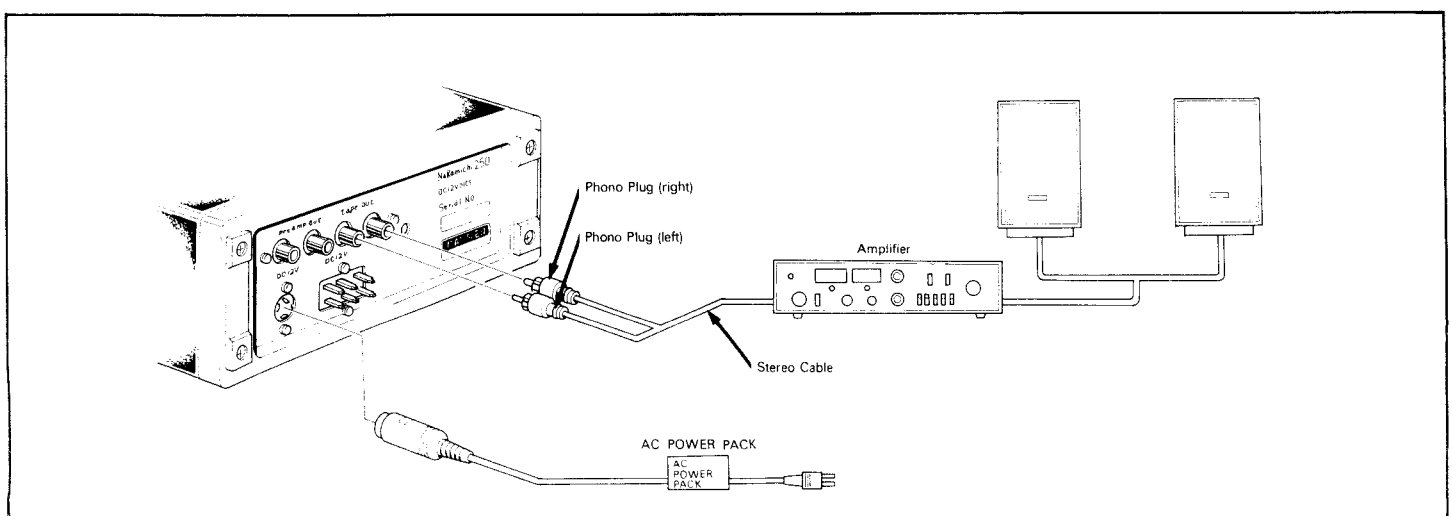
1) Since all audio and power connections are made with the single 6 pin connector, it is unnecessary to make any connections to the 250's "preamp out" or "tape out".
2) When using the system indoors with the ADS 2002 AC Adaptor, follow the connecting instructions supplied with the AC Adaptor.



Connections 2

Using the 250 in a Home System

1. Connect the optional AC Adaptor to the DC 12 volt jack on the 250.
2. Plug the AC Adaptor into the wall socket.
3. Connect the Tape Out jacks of the 250 to the "Tape In," "Tape Play," or "Aux In" jacks of the amplifier or receiver of the music system. Use a standard double phono plug-to-phono plug stereo connecting cable, and observe left and right indications.
4. If there is only a power amplifier (no preamplifier), or if it is desirable to have the Volume, Balance and Tone Controls on the 250 operational, utilize the Preamp Out jacks rather than the Tape Out jacks.

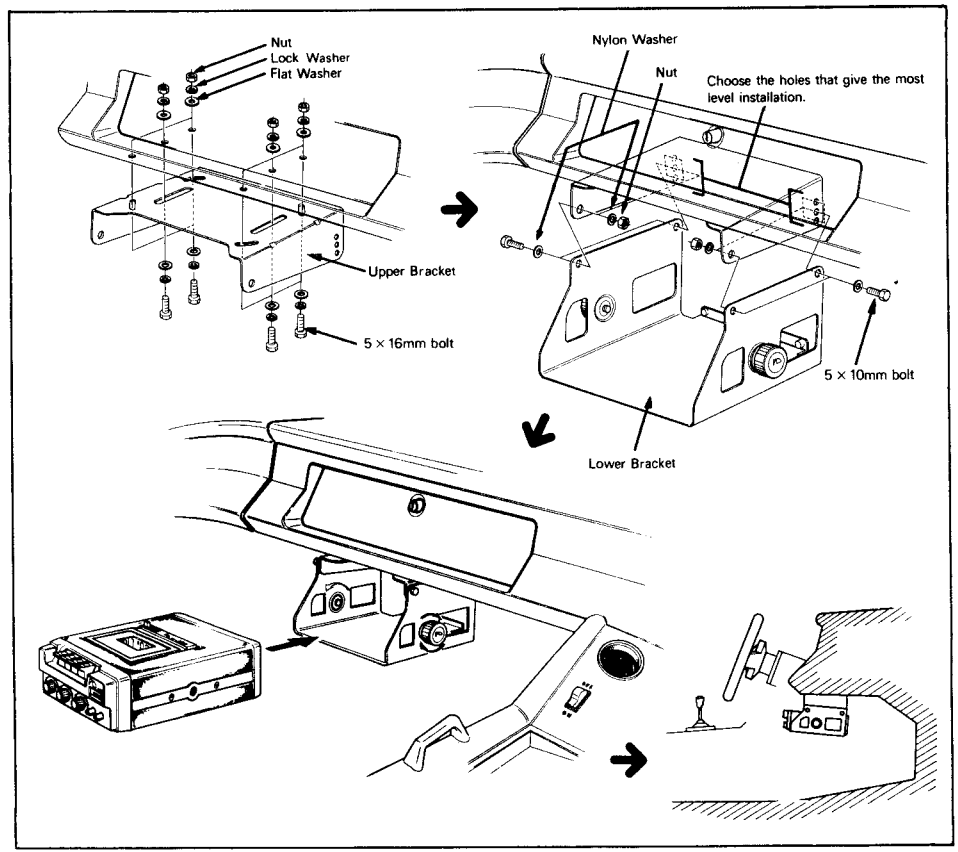


Important Notices

1. It is imperative that the heads, capstan and pressure roller be cleaned frequently. Most of the problems you are likely to encounter can usually be traced to dirty heads and/or dirty capstan and pressure roller. See page 9.
2. The Nakamichi 250 is equipped with the B type playback Dolby Noise Reduction Circuitry. Make sure to switch the circuit IN when playing Dolby encoded cassettes and OUT when playing non-encoded cassettes.
3. The EQ switch on the 250 must be set for the cassette to be played. The choice of either 70 or 120 microseconds will depend on the type of tape and which equalization was used during the recording of that tape. See page 7.
4. Take good care of your cassette tapes. They should always be stored in their plastic boxes to protect them from dust. Avoid touching the tape itself. With proper care your cassette tapes will provide you with many years of enjoyment.
5. Avoid the use of inferior cassettes. By sticking to well known brands, you can avoid premature head replacement and possible damage to the 250's transport mechanism. WE DO NOT RECOMMEND THE USE OF C-120 OR CHROMIUM DIOXIDE CASSETTE TAPES.
6. Wind up any slack in the tape manually before inserting the cassette to prevent the possibility of jamming.
7. The Nakamichi 250 will operate only in 12 volt NEGATIVE GROUND systems.
8. When installing the 250 in a car, boat or plane, make sure its normal operating position is as level as possible.
9. Keep the 12 volt supply wire away from wiper motors, light switches or any other device that is likely to induce unwanted noise.
10. Do not install the 250 too close to heat or air conditioning ducts.
11. Even in mild weather, if all the windows are kept closed, the temperature inside a car may rise to levels high enough to cause damage to the 250 and to cassette tapes. The 250 and the tapes should be removed from the vehicle if it is to be parked for an extended period in direct sunlight. If this is not possible, make sure there is some ventilation, and keep the 250 and the tapes out of the path of direct sunlight. Never store the 250 or your cassette tapes in the glove compartment or the trunk for long periods in hot weather.

Mounting Instructions

1. Choose a mounting location that is sufficiently far from all heat and air conditioning ducts (especially the former). Make sure that the 250 can be mounted as level as possible.
2. Using the upper bracket as a template, drill four holes using a 6mm or 1/4 inch drill as shown in the illustration.
3. Attach the upper bracket to the dashboard using the nuts, washers and 5 x 16 mm bolts as shown in the illustration.
4. Using the four 5 x 10 mm bolts, washers and nuts, attach the lower bracket to the upper bracket as shown in the illustration. Choose the rear holes on the upper bracket that yields the most level installation of the lower bracket.
5. Place the 250 on the lower bracket and push it in as far as it will go.
6. Tighten the two dial knobs on the lower bracket to secure the 250.
7. Make the appropriate connections as instructed on page 3.



Playback Procedure

1. Open the Cassette Lid by firmly depressing the Stop/Eject button.
2. Insert the cassette into the well and press down on the cassette until it is firmly in place.
3. Close the Cassette Lid. If it does not close completely, eject the cassette and repeat step 2.
4. Select the proper playback equalization time constant with the EQ switch. The EQ should be the same as the one selected when the tape was originally recorded on a cassette recorder. If the tape to be played is a prerecorded music cassette, or if you are unsure of the EQ with which the cassette was recorded, refer to the chart below.

EQ Switch Position	Type of Tape to be Played
70 μs	High Coercivity Tapes, such as Nakamichi SX TDK SA Maxell UDXL-II Chromium Dioxide*
120 μs	Standard Ferric Oxide and Low-Noise/High-Output tapes, such as Nakamichi EX, EX II Fuji FX Maxell LN, UD, UDXL-I TDK SD, ED, AD

* We do not recommend the use of Chromium Dioxide cassette tapes.

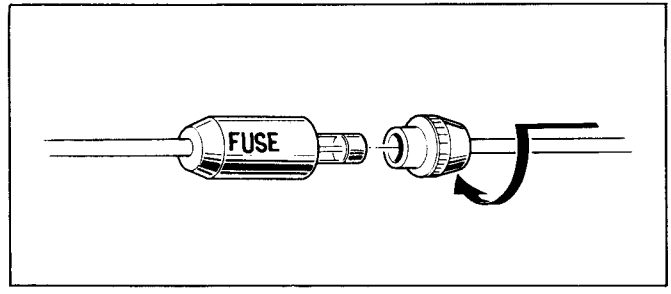
5. Switch the Dolby N.R. in if the tape to be played is Dolby encoded.
6. Depress the Play Button. If the 250 is properly wired, the Power Indicator Lamp should glow.
7. If the Preamp Out jacks are being used, adjust the Volume, Balance and Tone Controls on the 250 as required. If the Tape Out jacks are in use, perform these adjustments on the preamplifier, amplifier or receiver of the music system.
8. Depress the Stop/Eject Button lightly to stop the tape. Pressing harder will cause the cassette to eject.
9. If the end of the cassette is reached in Play, Rewind or Fast Forward, the 250 will automatically return to the stop mode. Interrupting the power to the 250 will also cause it to return to the stop mode.

Fuse Replacement

The 12 volt supply wire for the 250/2002 system incorporates an in-line fuse holder. The fuse inside this holder will blow if a short circuit or unusually heavy load exists in the power line. If the fuse should blow, it may be an indication of an error in wiring, a loose wire or a defect somewhere in the Nakamichi 250/ADS 2002 system. Check all wiring, then replace the fuse in the following manner:

1. Disconnect the 6-pin plug from the rear panel of the 250.
2. Open the fuse holder by first pushing the two ends together and then twisting as shown in the diagram.
3. Remove the blown fuse and install the proper replacement (6 ampere, fast-acting type).
4. Re-connect the 6-pin plug.

Note: If, upon attempting to operate the system, the fuse blows again, have the system checked by a qualified service technician.

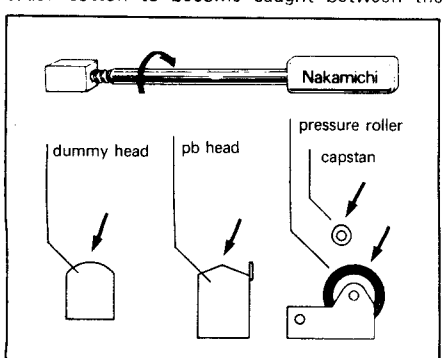


Maintenance

Cleaning

All parts that come into contact with the tape must be frequently cleaned. Even the best tape formulations leave a deposit of oxide sheddings on the heads, pressure roller and capstan. Failure to perform a periodic cleaning of these parts can result in signal dropouts, loss of high frequencies and excessive wow/flutter. A cleaning kit is supplied with the Nakamichi 250, but some Q-tips and methanol alcohol (preferably undiluted) will perform quite adequately.

Dip the Q-tip in alcohol and squeeze off the excess. Rub the Q-tip over the surface of the heads as shown in the photo. To clean the capstan and pressure roller, put the deck into the play mode with the power on. Apply the moist Q-tip to the right side of the rubber pressure roller (applying to the left side may cause cotton to become caught between the roller and the capstan). Move the Q-tip about so as to clean the entire surface of the roller. Then, put the machine into the fast forward mode and repeat the process with the capstan.



Demagnetizing

All metal parts that come into contact with the tape must be occasionally demagnetized to prevent the build-up of residual magnetism that can add hiss to and partially erase the high frequencies on a tape being played. Although the heads and capstan of Nakamichi cassette decks require demagnetization much less frequently than most other tape decks, it should nevertheless be performed once every 50 hours of use to be on the safe side. A Nakamichi Demagnetizer is recommended for this purpose since it is specially designed for ease of use with cassette decks, but any properly designed demagnetizer will do.

Remove all tapes from the vicinity of the tape player before proceeding. Make sure the tape deck is "OFF". Turn the demagnetizer on and slowly bring the tip as close as possible to the play head. Do not make contact with the head unless the tip of the demagnetizer is covered with thin vinyl or rubber to avoid scratching the surface of the head (a piece of vinyl tape may be used to cover the tip if it is not already covered). Move the demagnetizer tip slowly in a random pattern about the surface of the head for at least 10 seconds and then slowly move it toward the capstan. Repeat with the capstan, and then slowly withdraw the demagnetizer. Turn it off after it is at least 2 feet (approximately 60 cm) from the player. Never turn the demagnetizer off while it is close to the head or capstan as this may semi-permanently magnetize the metal part.

Since the 250 is a playback-only cassette deck, it has no erase head. A dummy head however, has been fitted where the erase head would normally be. This head should also be periodically demagnetized.

Lubrication

The moving parts of the Nakamichi 250 transport are fitted with oil-less bearings. It is not necessary for the user to provide lubrication.

SERVICE INFORMATION

Repairs

Please read the Warranty Card and/or notices accompanying this unit very carefully.

We sincerely trust that you will never experience difficulties with your Nakamichi 250, but should it ever require servicing, please consult your Nakamichi dealer or the Nakamichi dealer closest to you. As there are no user serviceable parts inside the unit, please do not attempt your own repairs.

Thank you for your confidence in Nakamichi products.

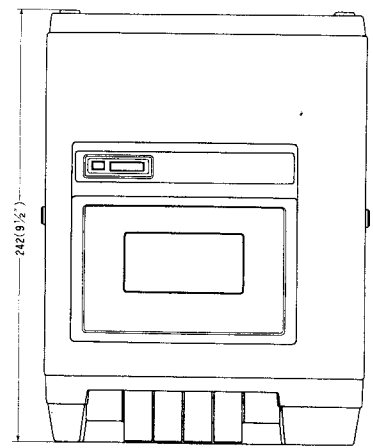
Troubleshooting Chart

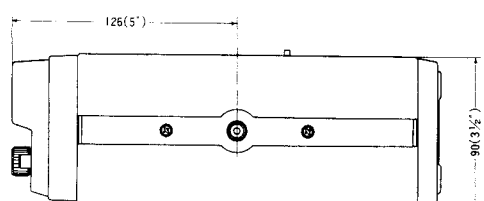
CONDITION	PROBABLE CAUSE	REMEDY
No power (indicator lamp does not glow)	Blown Fuse. Ignition key switch is "off". No AC power to AC adaptor. Poor Connection.	Replace Fuse. Turn on ignition key switch. Check AC power source. Use a different wall outlet, if necessary. Check all power connections.
No sound	Tape loose inside cassette. Poor cassette insertion. Jammed cassette. Dirty heads, capstan, roller. Poor connection.	Eject cassette, wind up any slack and re-insert. Eject cassette and re-insert. Replace or repair cassette. Clean all dirty parts. Check all audio connections.
Noise during playback	(Hiss noise) Head is magnetized. Poor power or audio connection. Induced engine or motor noise.	Demagnetize heads and capstan. Re-check all connections. Re-position all audio and power wiring away from motors, ignition lines, etc.
Excessive wow and flutter Dropout of sound	Dirty heads, capstan, pressure roller. Defective cassette. Poor recording.	Clean all dirty parts. Replace or repair cassette. Re-record or replace cassette.
Distortion	Distorted recording. Dirty head. Deformed tape.	Re-record or replace cassette. Clean head. Replace cassette.
Loss of high frequencies	Magnetized head. Dirty head. Improper EQ selected. Dolby N.R. being used with non-encoded tape.	Demagnetize heads and capstan. Clean head. Select proper EQ switch position. Switch Dolby N.R. off.
No fast forward or rewind	Poor tape winding.	Eject and re-insert cassette. Replace if necessary.
Uneven sound	Dirty heads, capstan, pressure roller.	Clean all dirty parts.
Crosstalk	Dirty capstan, pressure roller.	Clean all dirty parts.

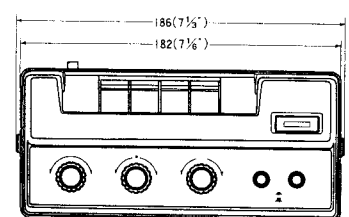
Specifications

Power Supply	DC12V (AC with AC adaptor)
Tape Speed	1-7/8 ips ±1.5%
Wow & Flutter	Less than 0.13% (DIN WTD Peak) Less than 0.08% (WRMS)
Frequency Response	40–17,000Hz ±3dB (Nakamichi Test Tape)
Signal to Noise Ratio	Better than 62dB (Dolby NR In Wrms CCITT, SX Tape)
Channel Separation	Better than 35dB
Cross Talk	Better than 60dB
Output	580mV (400Hz 200nWb/m, Volume at Max.)
Size	7-1/3"(W) x 3-1/2"(H) x 9-1/2"(D) 186m/m(W) x 90m/m(H) x 242m/m(D)
Weight	6-2/5 lbs (2.9 kg)

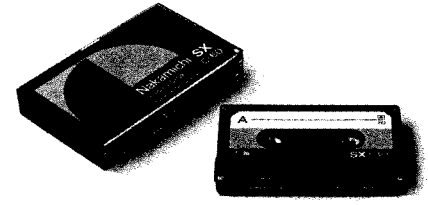
- Specifications and appearance design are subject to change for further improvement without notice.
- Dolby NR under license from Dolby Laboratories.
- The word "DOLBY NR" and the Double-D-Symbol are trademarks of Dolby Laboratories.





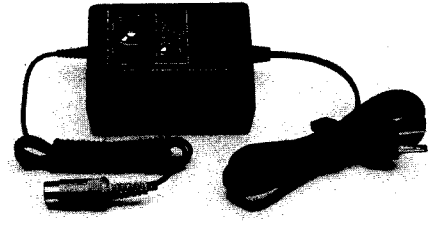


Optional Accessories

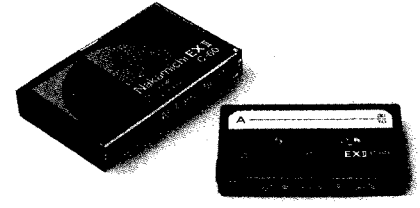


SX Cassette Tape C-60, C-90

EX Cassette Tape C-60, C-90



AD-551 AC Power Pack



EXII Cassette Tape C-60, C-90